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ORIGINAL ARTICLES.

REPORTS OF SEVERAL CASES OF NEUROPATHIC KERATITIS.*

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Neuropathic keratitis seems an appropriate name for a number of cases that have come under my care, some of whose histories I present herewith.

A disturbance of the nutrition of the cornea must have been the underlying cause; they were not infections nor did they depend on any specific disease.

One of them seemed nondescript, a stranger; it did not conform exactly to the descriptions of any of the various diseases of the cornea with which I was familiar.

Sometimes they recovered with local treatment only, and sometimes they required not only all my knowledge of ophthalmology and of general medicine; but all the help I could get from the neurologists and the internists.

There are several which stand out distinctly in my recollection. My earliest experience was with a medical confrère, who would occasionally consult me for discomfort in one of his eyes. There would be no conjunctival injection, but under a magnifying glass one or more small vesicles could be seen on the cornea. I would use a one grain solution of silver nitrate for a few days, and the vesicles would disappear, and the discomfort cease. No constitutional treatment and no other local treatment was necessary. I have had a number of such cases with a similar history.

Another case that I would speak of was my despair for a long

*Read before the St. Louis Ophthalmological Society, April 11th, 1910.

time; but resulted favorably, and has been an encouragement to me never to give up. The treatment extended over a period of nearly eight years, and I still see the patient occasionally.

She first consulted me December 28, 1896, for nearsightedness, which was corrected by $-4.d$ O.D. $V=20/24$; $-3.d$ O.S. $V=20/24$. At that time she was 35 years old. Ten days later she reported with what seemed to be an acute attack of conjunctivitis O.S.; three days after this she reported that O.S. had been very painful during the last day and night. There was slight conjunctival injection. I discovered no other lesion. Three days later I prescribed strychn. sulph., acidi arsen., $1/25$ of a grain each. From this time till the eleventh of March following she was almost constantly under my care for conjunctivitis, soreness of the eyeballs, and neuralgic pain at the nasal side of eyes.

At the above date I find the following note: "O.S. is very painful, some conjunctival redness with thickening of conjunctiva to the nasal side of cornea. There seems to be some alteration of the corneal epithelium."

This condition continued with varying intensity till April 1st when my notes read: "Epithelium gone from center of left cornea"; and on the 2nd, "A large quantity of the epithelium is gone from the left cornea and there is intense pain in O.S."

From this time, April 1st, 1897, she had frequent attacks of severe pain in one eye or the other, accompanied by loss of corneal epithelium, till June 23, 1904, a period of over seven years.

The attacks would begin with pain in the nasal side of the globe, considerable conjunctival injection, and after a few hours the corneal epithelium would be lost from areas of greater or less extent. These areas would look as if the epithelium had been torn off, not as the cornea looks after a bulla has broken and collapsed.

I watched her very carefully through a number of these attacks, but never discovered any bullæ or vesicles, though I searched diligently for them. The pain of these attacks was very great, so great as to confine the patient to bed, requiring in addition to cocain nitrate, holocain, dionin, and iced or hot applications, frequent hypodermic injections of morphine. Deep ulcers formed at times, first on the left cornea and later on the right.

For a detailed description of one of these attacks, I quote from my notes:

"March 16, 1898. Epithelium lost over the entire cornea O.S. Cocain nitrate and silver nitrate was used and the eye bandaged. The next day the eye was so painful that the patient was con-

fined to bed. Treatment was continued. The eye became more comfortable and a few days later the epithelium was reformed except at the lower margin of the cornea, a little to the temporal side. The corneal tissue at this point gradually became hazy. The treatment with cocain nitrate 5 per cent. and silver nitrate, one grain to the ounce, was continued till May 29th, when, the infiltration increasing, peroxide of hydrogen was used in addition. Patient was seen twice a day; the grayness extended and gave place to a deep, narrow ulcer with vertical sides, gradually extending around the corneal margin, the epithelium disappearing from the cornea and the cornea assuming a necrosed appearance. Morphine was required to relieve the pain."

Dr. Frank R. Fry had previously been called into the case.

On April 13, 1898, the condition was so bad that I told the patient's mother that I was not sure that I could save the eye. She said that her daughter had been cured of a former severe illness by Christian Science, and that if the eye were lost without trying it again, she would feel that she had not treated her daughter fairly, and asked me if I would resume charge of the case if Christian Science failed. I told her that I would, and I stopped my visits.

A week later the patient returned to my care, having suffered greatly in the meantime. I resumed the care of the case, and my treatment was much the same as before, with warm or hot douches of normal saline solution added.

This was the most severe attack that she had and no morphine was administered afterwards. There were attacks of more or less severity till August, 1904; most of this time the left eye was treated daily and was kept covered by a collodion dressing. The attacks of the left eye were very much the most severe and most prolonged.

As the result of these attacks the refraction of the left eye changed from M. 3. d to Hm. 10. d.

June 26, 1907, O.S. with +10. V=20/75.

This case I have always considered as a trophic keratitis. In the number of years that I carefully watched it, I never saw a vesicle or a bulla on the cornea. The first symptom was severe pain on the nasal side of the eye and a few hours afterward the corneal epithelium would be gone from an area of greater or less extent, and several times during this period there was a *desquamation of the vaginal epithelium*.

August 6, 1897, Dr. Fry wrote as follows:

"Mrs. — comes to me this a.m. much depressed from the fact

of a very 'irritating inflammation of the vagina.' It is an unusual looking vaginitis, purely trophic, I believe, and quite comparable to the trophic storms which strike her eyes."

Arsenic was among the earliest remedies prescribed, and was frequently given during these seven years. The other remedies depended upon chiefly were quinine and strychnine. She was also given bichloride of mercury and nuclein at times.

She has had no serious trouble for years.

Another case which came under my care May 4, 1908, interests me very greatly, not so much for its history while in my care as from the history afterwards.

It was a woman 42 years old. The trouble had existed for about a year before I saw her. It was one of typical vesicular keratitis. When I first saw her, O.D. M. O. 5 d. V=20/48 to 20/38. O.S. M. O. 5 d V=20/48 to 20/30.

There was a slight hazy area about three and one-half m.m. in diameter just below the center of each cornea. On these areas there were five or six small vesicles, ranging from $\frac{1}{4}$ to 1 m.m. in diameter. She had been told that her optic nerves were affected, but the ophthalmoscope showed them to be normal.

Believing the disease to be the manifestation of a general trouble as much as a local condition, my attention was directed as much to her general condition as to the condition of the cornea. I gave her such general tonics as seemed indicated from time to time. This included bichloride of mercury, quinine, strychnine, arsenic, and iron, in various combinations; occasionally asafoetida for her nervousness and sleeplessness. I regret to say there was no systematic use of arsenic.

Locally my treatment was chiefly soothing; stimulating and caustic treatment resulting in severe pain and no apparent improvement.

The blisters were ruptured, holocain 1 per cent used freely, and the eye, whichever one she could get along without, was closed with a collodion strip or a collodion dressing. Other things used locally were Pagenstecher's ointment 1/240 to 1/60 and alum sulph. sol. 1/240, xeroform dusted on the cornea, etc.

Finally as I could see no improvement in the local condition, I limited my local treatment from July 17th to 25th to rupturing the vesicles, washing out the eyes with normal saline solution, filling the conjunctival sac with the yolk of an egg and closing the eye with a collodion dressing. This was the most satisfactory treatment employed, as far as the patient was concerned, and I hoped the egg would nourish and improve the con-

dition of the diseased vesicle-producing areas of the corneæ.

July 25th, 1908, the patient went to Denver, Colo., and I gave her a letter to Dr. Edward Jackson. At that time without correction: O.D. V=20/19. O.S. 20/48 to 20/30. I thought quite likely the change in climate would improve her health and with this improvement her eyes would get well.

Some time afterwards I heard indirectly that she had left Dr. Jackson and had had her uterus curetted. Accordingly I wrote him and his letter completes my history of the case:

"I have long intended to write you some account of Mrs. — and am glad to be reminded of it. She did go elsewhere on coming to Denver, but when I saw her, in August, 1908, her condition had not altered much since leaving you.

"I cauterized her ulcers superficially with nitric acid, used holocain a good deal, and some dionin, continuing atropin. I also put her on small doses of quinin, and for a time thyroid extract. Bleb formation almost ceased; two weeks or more intervening between such attacks. But her corneæ did not improve satisfactorily, and I referred her to Dr. A. S. Taussig on account of a metrorrhagia. He found the hæmoglobin reduced to 35 per cent and discovered a fibroid in the uterus. Removal was advised, but refused. Under treatment her condition improved; hæmoglobin rose to 75 per cent., and bleb formation ceased. But the cornea was still not in good condition. In December, after a very acute hæmorrhage, she submitted to hysterectomy, which was performed by Dr. F. C. Buchtel. After this the eye improved steadily, and has remained free from any recurrence of the old trouble. The scars have gradually cleared up under dionin, although they are directly in front of the pupil. When last seen two months ago, she was given correcting lenses:

R. —0.50 sph. \ominus +2. cy. axis 165° V=4/6 partly

L. +5. cy. axis 15° V=4/15

"With dilated pupils her vision is still better, but with pupils contracted by strong light, it is worse. She is now living at Blanca, Colorado, where she is running a small store."

Since reading Dr. Verhoeff's article, which he presented at the last meeting of the Ophthalmic section of the A. M. A., I should treat a similar case with the systematic use of arsenic; should cauterize the surface of the cornea exposed by the ruptured vesicle with tincture of iodine, and should use holocain 1 per cent. freely. I might try the "egg" treatment in addition to this.

SELECTIONS.

RADIOTHERAPY.*

J. M. DAVIDSON.

The author says: In September, 1903, I first tried radium in a case of a granulation of the eyelids. This experiment did not meet with any success, which may have been due to the small quantity of radium then available, and to inexperience in its use. It was not until February, 1906, when Mr. Arnold Lawson sent me a case of spring catarrh of the eyelids that I made any further application of radium to diseases of the eye. This disease, which is not very common in this country, has been hitherto incurable. The patient was a boy, aged 13, who had suffered for eighteen months. Mr. Lawson had tried a variety of treatments for about a year without any effect. On February 9th the upper lid of the left eye was everted, and three radium tubes, containing altogether thirty-nine milligrammes of radium bromide, were held in contact with the granulations for fifteen minutes. On February 19th the treated eye was much better, except that, five days after the treatment, some reaction followed. On this occasion four tubes, containing forty-four milligrammes, were applied for ten minutes to the left everted eyelid, and for fourteen minutes to the right. It was noticed that the granulations of the left eyelid seemed better. On May 8th the right eye was much better, while the left had again improved a little. The progress towards recovery was uninterrupted after a few more treatments, and the patient got perfectly well, the lids being smooth and without any scar. This patient remained perfectly well ever since, and the cure may now after four years be looked upon as permanent.

Three similar cases, one being of six years' standing and one an extremely severe case, have done exceedingly well with radium treatment, and all are now nearly cured.

In treating lesions of the eyelid with radium it is most important to protect the eyelashes by means of lead foil, otherwise they may be destroyed. It is also advisable in prolonged exposures generally to protect the normal part (on which you do not mean to act) by means of lead foil covered with thin rubber.

*Bristol Med. Chir. Journal, March, 1910.

Further, in the treatment of eye diseases, when the radium tube has to be held in position, it is most important to wrap the upper part of the tube in several folds of lead foil so as to protect the fingers of the person holding it. Otherwise severe burns may result if several cases are being treated consecutively.

With regard to diseases of the eye, I am carrying on researches at the Royal London Ophthalmic Hospital, Moorfields, assisted by Mr. Arnold Lawson. As to this it may suffice to say in the meantime that radium has yielded most astonishingly favourable results in many cases, some of which were reported in papers by myself and Mr. Arnold Lawson in *The Transactions of the Ophthalmological Society of the United Kingdom for 1909*. In cases of hypopyon ulcer of the cornea, corneal ulcers generally, episcleritis and cases of pterygium (even after several operations have failed to cure), it has yielded results superior to any other known method of treatment. Radium may therefore be looked upon as one of the most important therapeutic agents in superficial eye diseases.

In this connection it may be mentioned that if a tube of radium be held anywhere close to the eyes, in the dark, with the eyelids closed, a very peculiar sensation of diffused light is produced. This is in no way due to the visible rays, as the effect is quite the same if the tube of radium be wrapped in black paper. We have not found that the deeper diseases of the eye are benefited by radium rays; but work in this direction as yet has been too limited to admit of our speaking with any certainty in the matter.

SUBSTITUTE OPERATIONS FOR ENUCLEATION.*

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All tendencies in surgery of the present day are in the direction of conservatism, and in ophthalmic surgery also we should adopt the same principles, especially in regard to enucleation of the eyeball. We are now able to save many eyes which in earlier times would have been removed. This is due partly to the progress made in the treatment of diseases of the eye, partly to operative methods adapted to substitute enucleation and to save either the whole globe or parts of it—parts which form a better stump for the prothesis.

*The Post-Graduate, April, 1910.

Not included in these conservative endeavors are all eyes affected with a growth and all liable to produce sympathetic ophthalmia. Here, I think, there can be no doubt that only enucleation is justified. Even exenteration of the sclera is not sufficiently radical for such purpose. A former assistant of mine has shown by microscopic examination of a stump resulting from an earlier exenteration, that at least pigment granules remain in the cavity; and as these remain, we may expect to find the unknown bacteria of the sympathetic ophthalmia. In other cases remains of inflamed choroidal tissue were found and, in fact, sympathetic ophthalmia occurring later than six weeks after exenteration has been several times observed and reported in the literature.

Exenteration should, therefore, be restricted to cases of panophthalmitis where enucleation is forbidden because of the danger of meningitis. Here it gives very satisfactory results, much better, in my opinion, than incision of the cornea and sclera. The patient is relieved at once, is healed after five to eight days and the artificial eye is more moveable and has less displacement backward than after enucleation.

It seems to me there can be only little dissent regarding this operation; but I want to call your attention to two operative methods known for some time, but in my opinion, not as much appreciated by a great many of my colleagues as they should be, namely, *resectio optico-ciliaris* and amputation of the anterior part of the eyeball.

The resection, at first recommended some thirty years ago by Schoeler, consists of cutting the optic and the ciliary nerves behind the eyeball and removing a long piece of the former. Schoeler performed it after temporary tenotomy of the external rectus muscle from the temporal side; Schweigger recommended to proceed from the nasal side after tenotomy of the internal rectus. After having tried both methods I have performed the operation for the last ten years without cutting a muscle, as there is space enough to advance and to turn out the eyeball between the two muscles.

I start from a conjunctival section parallel to the corneal margin, between the internal and inferior recti muscles, divide the subconjunctival tissue, insert a sharp hook into the sclera as far back as possible, turn the globe to the opposite side and introduce the scissors over the hook to the apex of the orbital pyramid. I then cut the optic nerve, about 8-12 mm. behind the eyeball, remove the speculum and all instruments, and press the

globe strongly backward in order to check the hæmorrhage, if there be any. After half a minute I again introduce the speculum and turn the eyeball with hooks and forceps completely out of the conjunctival wound, so that the optic nerve is directed forward. I then separate all the ciliary nerves entering around the posterior pole, divide the optic nerve a second time near the sclera, rotate the eyeball into its former position and suture the conjunctiva. The cure takes eight days. The cosmetic result is an ideal one; after some weeks it is impossible to see that an operation has been performed.

In what conditions is this operation suited as a substitute for enucleation? I think always when the globe is removed solely on account of pain. First, in all cases of painful absolute glaucoma, especially hæmorrhagic glaucoma, or second, any glaucoma after thrombosis of the vein. In these cases iridectomy is often not only of no avail, but may even do harm in producing severe hæmorrhages, irritations of long standing or staphylomatous scars. Whether cyclodialysis will give better results, can be learned only by large experience, and as matter of fact, enucleation of these eyes is done frequently.

Another category are those old atrophic eyeballs, only slightly or not at all irritated, but unable to bear an artificial eye on account of its irritation; globes containing either new formed bone or small inflamed spots in the uveal tract. As a rule, these eyes are removed partly for fear of sympathetic ophthalmia, partly to render possible the prothesis. It seems to me, resection is preferable also for these cases, if there are only slight signs of inflammation and if some years have elapsed since the eye became atrophic. Even a small stump is of great advantage in regard to the position and mobility of the artificial eye, especially as in many cases only a small amount of conjunctiva is at our disposal. Here removal of the globe is likely to render the conjunctival sac so narrow that there is place for only a small glass eye located too far backward and being nearly without motility.

Last, and not without hesitation, I mention an indication advocated at first by Schweigger, supported by the adherents of the migration theory, strongly rejected by the adherents of the metastatic theory, namely, resection as a preventive operation against sympathetic ophthalmia. As far as I know, no ophthalmologist nowadays maintains this indication in its original sense, or thinks this operation safe if we have to deal with fresh plastic iridocyclitis of traumatic origin. But there are cases in which

the inflammation has nearly completely subsided after a treatment of some months. The eye has still a good appearance, but affects the patient by intermittent pain and irritation; and as there are supposed to be inflammatory spots in the interior of the globe, there is surely some danger for the other eye. What is to be done? The answer is an extremely difficult one, and we have to think over the matter for every individual case. Only a large experience can teach us how to avoid mistakes, and the principle is rather to enucleate too much.

I have performed about 50 resections for this indication and have had but one sympathetic ophthalmia, and in this case I had not done a neurectomy, but only a neurotomy. After having cut the nerve at the apex of the orbit, there was such severe hæmorrhage as to prevent me from completing the operation. I should have preferred to remove the eye, but as the patient was under an anæsthetic and had not consented before, I was not permitted to do so. The sympathetic ophthalmia came on after eight weeks, and was rather stubborn but healed completely after some relapses, the vision being one-third.

This experience corresponds to the impression I have received from studying the literature. There are published about twenty cases of sympathetic ophthalmia after resection, but either the outbreak was within the time enucleation might not have prevented it—*i.e.*, within six weeks after the operation—or there was some mistake in the technic, as in my own case. Sympathetic ophthalmia after simple neurotomy is astonishingly frequent. But there are certain cases in which no objection can be made, and I have to admit that resection is not as sure as enucleation. Nevertheless, I am convinced that resection is at least a relative protection against sympathy, and I think it is justified in some selected cases of slight inflammation and cosmetically good condition even in an injured eye, and it should be done if the patient does not consent to enucleation.

Before concluding this operation I have to mention its dangers and disadvantages. For there are dangers, although I think experience will teach us how to avoid them.

First to be mentioned is severe hæmorrhage occurring after the first section of the optic nerve. It is nearly always possible to control it by pressing backward the eyeball immediately after the section. The case mentioned before was the only one, out of about 150 resections, in which I was unable to complete the operation; but hæmorrhages of such an extent as to force me to suture the lids, came on in about 8 to 10 cases.

Sometimes one of the nerves or muscles is severed, mostly the abducens, seldom the superior rectus and the levator of the upper lid. I have seen this latter accident twice, but only in operations performed by my assistants; also, paralysis of the external rectus has become very rare in my practice of recent years. I think it is due to unskillful management of the scissors and can be avoided by experience. Recovery is usually incomplete.

The last but very important question is whether the insensibility of the eyeball produced by cutting the ciliary nerves remains complete. According to my experience there can be no question that the nearly completely insensible cornea becomes sensible again some months after operation, and experimental and anatomical researches have shown, that from the old trunks in the orbit new nerve fibers grow into the globe, boring their way according to the least resistance. Only twice I have seen that not only some sensibility, but also pain returned, inducing me about one year later to remove the eye. Except these two cases, no resected patient has returned to see me on account of pain, and in the 13 years when I was in Greifswald there was no possibility to go round to other oculists, like here in New York.

I had gone more in detail in discussing the resection; I shall endeavor to describe briefly the amputation of the anterior half as there is not much controversy, I think, either in the indications or the technic.

Amputation is the removal of an oval flap of the anterior wall of the globe including cornea, iris, and crystalline lens, and parts of the sclera at both sides of the cornea. The size of the flap depends upon the size of the globe; namely, it has to be larger in buphthalmus, smaller in beginning atrophy; for this operation is done to procure a stump sufficiently large for the glass-eye to rest upon. The remaining posterior part of the eyeball is to be sutured very accurately with interrupted sutures, passed through conjunctiva and sclera; and I lay stress upon their being placed only through the exterior half of the sclera in order to avoid the ciliary body and to invaginate the margins of the sclera.

This operation should substitute enucleation in all cases where there is neither new growth nor inflammation in the posterior half of the globe. I recommend it for all cases of primary or secondary buphthalmus, of staphylomatous changes of cornea or sclera, and of serpiginous ulcer of the cornea having destroyed the whole membrane and threatening the formation of a staphyloma. The position of the artificial eye is extremely better

than after enucleation; the eye is not displaced backward as is the case especially in buphthalmus, and its movements—very poor after an enucleation—are nearly normal.

In concluding, I want to mention that staphylomata of the sclera disfiguring the bearer are no absolute indication for enucleation, it being possible to remove them alone. Even if the cornea is pushed to the opposite side and not situated in the centre of the palpebral fissure, we can place it in its right position by removing the thinned piece of sclera, it being the cause of the displacement.

But this indication is a rare one; I performed the operation only four times. The result was always satisfactory, in the first case even better than expected, as I succeeded in saving a vision of $1/20$, useless before to the girl, as the cornea was hidden behind the lower lid.

I have not been able in the short time at my disposal to enumerate all methods employed to avoid the enucleation. I could not speak on tenotomy of all four recti muscles in order to draw forward an eyeball having become too small, or on tattooing with colors in order to embellish a large disfiguring leucoma. I thought it better to go a little into detail on the more important questions than to be quite exact in the enumeration of all methods ever mentioned.

DISCUSSION.

Dr. Weeks said the more, however, that he practices ophthalmology the more prone he is to remove an eyeball that is diseased; he feels that it is conservatism to do so. If a diseased eye occurs in an individual of advanced years, it is a great thing for that individual to have a serious annoyance removed, and removed expeditiously, with the assurance of protection to the other eye. It is much better to remove such an eye than to perform an operation which is somewhat uncertain and is liable to subject the individual to a good deal of annoyance. Enucleation as usually performed gives a socket for the wearing of an artificial eye that will not irritate the individual, and can be well taken care of without any discomfort.

There are individuals in whom it is desirable to have as perfect a cosmetic effect as possible as in the young, especially young females. In older individuals, the slight sinking of the artificial eye is of no great importance, a slight improvement in the cosmetic effect is of no consequence to them. What they want is comfort and safety.

There are numerous operations for enucleation. Dr. Schirmer had spoken of exenteration. That does give a better stump than enucleation, but is suitable only in certain cases—in young individuals, or in individuals whose tissues are vigorous. We may remove the contents of the globe and expect, with fair assurance to have healing without trouble—although it may be prolonged for from three to four weeks. In individuals whose vital processes are feeble, we may get a necrosis of the sclera. That has happened to him in one case, and he has seen it in two others—a necrosis of the sclera which delays healing for a number of weeks, eventually the sclera has to be dissected out—a virtual enucleation performed in order to bring about a satisfactory healing.

The operation for removing the anterior segment of the globe with retention of a portion of the vitreous, is serviceable in a certain number of cases in young individuals whose vital processes are vigorous. The operation suggested by the reader of the paper is a very excellent one. There are, of course, many modifications.

The operation proposed by Lagrange is one which has for its purpose the removal of the cornea with about 5 mm. of the sclera, the removal of the entire lens and ciliary body. The muscles are detached and drawn over this opening in the sclera, and the conjunctiva and subconjunctival tissues closed over these. The healing is very satisfactory, and a good result is obtained.

The removal of the posterior portion of the eyeball is also done in some cases. This is known as Mercati's operation. It consists in dividing the tendon of the internal rectus muscle, dividing the optic nerve and turning out the globe by catching with a hook and forceps. The posterior segment of the globe is then cut away, the contents of the globe removed, the internal rectus sutured to the globe and the wound closed. He could not, however, see any excuse for such an operation.

The resection of the optic nerve and ciliary nerves before they enter the globe is an operation somewhat milder in form than the one just described. It may be employed in some cases in which the globe is painful, perhaps in cases of absolute glaucoma, but accidents may occur. The hæmorrhage is sometimes enormous, the globe has been pushed forward so that the lids could not close over it, followed by a hæmatoma which required five or six weeks to subside. Dr. Weeks has never had any bad results following this operation in his own experience, but, as Dr. Schirmer said, sympathetic ophthalmia has been reported in twenty cases.

When sympathetic ophthalmia occurs in even one per cent of the cases due to the operation, the operation should be abandoned. Sympathetic ophthalmia, in a majority of cases, means virtual blindness. He would not think of preserving the globe by this method of operation for the cosmetic effect, if the globe presented any possibility of causing sympathetic ophthalmia.

The irritative principle, as promulgated by Fuchs, passes by way of the ciliary vessels from the anterior segment of the exciting eye ball. When sympathy occurs it does not follow that it would not have happened if the resection had not been performed, for it has occurred a short time after the enucleation of an eye—the virus was already on its way before the eye was enucleated; but there are enough cases of sympathetic ophthalmia following resection to make us very certain that the infection occurred after the resection had taken place. Resection should be limited to a very few cases of eyes, incapable of exciting sympathy where it is necessary on account of the cosmetic effect to preserve the eyeball.

Dr. Valk said that he was inclined to take a rather conservative view in regard to the substitute operations for enucleation and to stand on that platform. The remarks made by Dr. Weeks expressed his ideas exactly. He had said that if sympathetic ophthalmia occurs in one per cent. of the cases, the substitute operation should be thrown out, as sympathetic inflammation was very rare after a properly performed enucleation. He did not think that any one who advances any substitute operation for enucleation can feel confident that sympathetic ophthalmia may not follow. In his own experience he does not feel that we are justified in adopting these substitute operations for enucleations. He has performed enucleation in the midst of acute panophthalmitis, which involved all the tissues of the eyeball, and has seen these cases go on to recovery. When enucleation is properly performed the patient is well in a few days, and he can have an artificial eye inside of a week or ten days after the operation; and after that the patient is perfectly safe from sympathetic inflammation.

He has under observation a case in the clinic which he does not quite understand, for it might be supposed to be a case of sympathetic inflammation following enucleation. The patient was a young girl who had to have the eyeball removed, which was done after the method he has employed for many years. The girl made an excellent recovery, but in two weeks or a month after the operation she had an extensive attack of neuroretinitis, a thing he has never seen happen before. He could not feel, how-

ever, that it was a sympathetic inflammation, but simply an intercurrent disease that yielded quickly to suitable treatment and the vision to-day is normal.

He prefers to do an enucleation in all cases, and has never adopted any substitute operation of any kind where he thought enucleation was indicated. There is only one reason where he thinks it may be advisable to adopt this method—we may get a little more rotation in the eye ball, a little better cosmetic effect; but he has never seen one that gave him more rotation than he gets by enucleation, and he cannot see any justification for it on that line, or any reason why he should put the patient in danger of having another operation a few months or a year afterward.

The operation he does is the one recommended by Snell, which gives an excellent rotation for an artificial eye. If this is done carefully, the patient is put in a safe position, and there is a good cosmetic result.

Dr. Alger said that he had not had much experience in these substitute operations, for he had always thought enucleation the safest procedure, the only possible objection being that perhaps it does not give quite so good a cosmetic result. The cosmetic effects, however, of the operation that Dr. Valk spoke of are very fair. He had seen substitute operations by other surgeons, such as implantations and eviscerations, and had not seen much cosmetic advantage excepting perhaps that the motility of the eye was a trifle greater. This depends fully as much upon the artificial eye as upon the base on which it is set. The advantage is so slight that he has always been inclined to stick to the safer enucleation instead of trying other doubtful methods.

Dr. Burke said that he was in favor of conservative surgery—and by conservative surgery he means what is best for the patient. Very few cases require operation in that line. An eye that is septic or that is in any danger of producing sympathetic ophthalmia should never be treated in any other way than by enucleation. The patient should be left in a condition that is not dangerous. So far as getting a better stump is concerned, if we get a little more packing, it holds the eye forward, but the motility is null, so far as his observation goes. Where there is septic condition, an exudate, the operation spoken of is dangerous. Where there is any exudate, the wound should be left open so as to get all the drainage possible—allowing the passing out of the exudate and healing in a short time, with no danger to the patient.

In glaucoma, where the patient is suffering great pain, Dr. Schirmer had spoken of resection of the nerve. That procedure has some objections. In absolute glaucoma, the pain will sometimes continue after all the nerves are divided; in other cases there are excessive hæmorrhages, but with a little care that can be obviated. If the external rectus is separated and, instead of dragging the nerve forward and cutting it off, a heavy forceps is passed down and the nerve compressed for a few minutes, the calibre of the artery will be eradicated and the nerve can be removed without serious hæmorrhage.

The operation of neurotomy or neurectomy is unsafe in any condition of sepsis, for it does not prevent the irritation from passing to the other eye. He agreed with the gentleman who had just spoken, that if we enucleate in all cases where it is practicable we will find that our patients are better served.

Dr. Hubbard said that he has seen only a very limited number of these substitute operations for enucleation, for most of which he had been indebted to Dr. A. E. Davis. There has been a creditable degree of success in his cases, and yet after the evisceration operation an artificial shell must be worn, and only a very little motility is gained over the enucleation method, for in the wearing of this artificial shell there is usually very little motility. He has seen well qualified persons take some little time to detect a well adjusted artificial eye after enucleation; and after the substitute operation the physician has considerable anxiety for a time for his patient, for fear of sympathetic ophthalmia. Is it wise, therefore, to submit a patient to the increased danger for the small advantage to the appearance, or for the gain of a very little motility only?

In regard to opticociliary neurectomy or neurotomy, if the dangers in these cases are a little greater, it seems that there is a little more to be gained than by evisceration, for the cosmetic effect is better. Therefore on the side of evisceration he would vote no, but with carefully selected cases he thought that neurectomy would give very good results.

Dr. Schirmer: I thoroughly agree with Dr. Weeks, Dr. Valk and the other gentlemen who were kind enough to take part in the discussion, that enucleation is the simplest and the safest way to settle all troubles of the eye; but I cannot agree that it is also the best. No doubt the technique is very simple, the healing takes only a few days, no relapse will occur and there is no danger—except in panophthalmitis, which I will speak about later—but there is much lacking that concerns the final result. Work-

men especially, performing hard labor, perspiring a great deal, the perspiration entering their conjunctival sac, or working before an open fire, are sometimes not at all able to bear a glass eye. It hurts them, they suffer from conjunctivitis, as their cleanliness is only poor, and if they remove the artificial eye, the lashes of the upper lid lie upon the conjunctiva of the lower one, irritating it and producing pain. Of course, it is not the rule, but the inconveniences, especially in workmen, are sometimes very disturbing and there are cases related in the literature by French authors where they were compelled to extirpate the whole conjunctival sac and to suture the skin of the lids in order to relieve the patients from their troubles, and I have seen such a case myself.

The healing after an exenteration takes three to four weeks only when we have to deal with necrosis of the inner layers of the sclera mentioned before by Dr. Weeks. This happens in rare cases of very severe panophthalmitis, but I do not think it is necessary to interfere with a second operation, as the inner layers will be eliminated after some time and the cavity closed quickly after that. This manner of healing is an exceptional one and I cannot agree that three to four weeks is the usual time. As a rule, I could dismiss the patient after a week.

What concerns resection for preventing sympathetic ophthalmia, I know very well that there can be a great deal of doubt and discussion, but I wish to emphasize that the meaning of my words has been somewhat changed in the course of the discussion. I never would venture to recommend resection for fresh traumatic irido-cyclitis or even for septic eyes. My words were "There is no ophthalmologist now-a-days who thinks this operation to be safe enough if we have to deal with fresh plastic irido-cyclitis of traumatic origin." And later, "I think it is justified in some selected cases of slight inflammation and cosmetically good condition even in an injured eye."

But I am not of the opinion that one case of sympathetic ophthalmia after the resection should prevent us at all from performing it in eyes with slight signs of inflammation. If it be so we would have to abandon many operations. For instance, there could be no doubt about enucleation for panophthalmitis recommended before; for there are cases related in the literature of death following this operation by suppurative meningitis, never observed after exenteration, and we will easily understand this difference in remembering that in enucleation the lymph-spaces of the optic nerve are opened, spaces communicating directly

with the sub-arachnoidal space. Each drop of pus entering the orbita from the interior of the eyeball, may infect the lymph-sheaths and carry a purulent inflammation to the brain. In exenteration, the nerve is not sectioned, the lymph-sheaths not opened and therefore there is no danger of infection. That is the reason why I prefer exenteration in panophthalmitis, not the slight cosmetic advantage.

What concerns the cosmetic result after enucleation, I have never seen such a degree of motility as after amputation and there is also much to be desired in what concerns the position, it being too far backward, especially after removal of enlarged globes. In this opinion I am in concordance with the majority of my colleagues as we can suppose regarding the permanent endeavors to improve the cosmetic results after enucleation. I recall the Mules' operation, the injection of paraffin, the implantation of fat-tissue, the first not being without danger as it has produced in some cases sympathetic affections.

Furthermore, I wish to say a few words about the open treatment of exudates behind the eyeball. I think it is to be recommended in all cases of abscess in the orbita, but not in the exudates arising from a panophthalmitic eye. For we have not to deal with independent inflammations in these cases as they are not due to the presence of germs, but only of toxins in the orbita. The relation between inflammation of the orbital tissue, especially Tenon's capsule, and abscess of the vitreous is the same we meet in hypopyon and serpiginous ulcer. As in this case the bacteria are situated in the cornea and only the toxins penetrate into the interior chamber producing a purulent iritis, so we have to deal with bacteria in panophthalmitis only in the interior of the eyeball, the toxins alone penetrating through the sclera and producing inflammation of the surrounding tissues. Therefore this inflammation is prevented at once by removal of the infected focus of the globe, and the orbital inflammation heals in all these cases without further delay.

In concluding, I wish to mention that the paralysis observed sometimes after resection is not at all a necessary complication of this operation and not due to overstretching but to cutting of the muscles. For these cases are rare and if we have to deal with them we find the paralysis complete and permanent.

MEDICAL SOCIETIES.

THE OPHTHALMOLOGICAL SOCIETY OF THE UNITED KINGDOM.

Thursday, March 10th, 1910.

The President, Dr. G. A. Berry, in the Chair.

CARD SPECIMENS.

Retinal Disease with Massive Exudation and Detachment.—Mr.
J. B. Lawford.

Arthur H., aged 20, came complaining of failure of sight in the left eye for about 18 months, and the same in the right for the last six months. The vision was counting fingers at about 12 inches in both eyes, though less distinctly in the left than the right. Ophthalmoscopically in the right eye there were fine dust-like opacities in the vitreous. Some very dilated and tortuous vessels (? veins) were seen in places, and in the upper part of the retina were innumerable small yellowish flecks and areas of more extensive exudation. Large massive exudates were situated in the upper and temporal quadrants, and some also in the lower, though not so clearly visible; the upper retinal vessels were nearly normal, and in parts the exudate followed the course of the vessels. In the left, the ophthalmoscopic changes were of a similar type but not so distinctly seen, and there was one large area of exudate on the nasal side. In the extreme lower periphery there appeared an opaque grey reflex with a spot of yellow exudate, and on the temporal side was a large fluffy mass. All family and personal history was negative, except that the mother died of "consumption of the brain."

A Case of Persistent Mydriasis in both Eyes.—Mr. A. W. Ormond.

E. P., female, aged 41, first seen in June, 1908, came complaining of both pupils being larger than they ought to be. The vision in each eye with correction was 6/9. The pupils were dilated and

fixed, and did not act to light or accommodation, but there was nothing found to account for this condition. The fundi were normal, there was slight contraction of the visual field, and eserine made no difference to the size of the pupils.

A Case of Transient Myosis Associated with Headache.—Mr. A. W. Ormond.

F. L., male, aged 8, came for treatment in January, 1907. The history was that, eight months before, the child had complained of headache, and the parents noticed at the time that the pupil on the right side was very small; several similar attacks followed at intervals of a few weeks; the pupil on the left side was found to be rather more dilated than normal. The attacks consisted of a headache followed in two hours by a contracted right pupil, and after one and a quarter hours the size of the pupil became normal again. There was +1.5 of hypermetropia, and the optic disc appeared, if anything, slightly redder than normal. In all other respects the boy was healthy.

In connection with this case, Dr. Buzzard suggested some temporary paroxysmal blocking such as a small movable tumour, of the third ventricle interfering with the passage of fluid and thus producing a condition of hydrocephalus for the time.

Oxycephaly with Optic Atrophy.—Mr. E. A. Dörrell.

E. P., female, aged 12, came with a moderate degree of tower skull, with bilateral optic atrophy, and divergent strabismus of the left eye. Instruments had been used at the birth of the child, which was the sixth in a family of eight. The forehead rose steeply to a height exceeding the normal, and a conical growth of bone could be felt at the bregma; the greatest antero-posterior measurement was 16.5 cm., the transverse 13 cm., the byzygomatic 11 cm., and from the glabella to the conical mass 13 cm. The right vision with correction was 6/18, and that of the left counting fingers. There was no proptosis, no nystagmus, and no limitation of movement; but the optic discs were both pale and the retinal vessels normal.

A Folding Ophthalmic Operating Table.—Mr. Harrison Butler.

The table was arranged to shut up so as to be easily portable; and the price was five guineas. It was simple and cheap and could be cut down to suit the height of the operator.

Congenital Cataracts—Lamellar in the Left Eye, and Approximating to Discoid in the Right.—Mr. J. H. Fisher.

This case afforded a connecting link between a lamellar cataract and a discoid cataract. Pedigrees have been produced containing examples of one kind or the other, but never both varieties in the same patient. E. G., aged 38, female, attended Moorfields, and the vision in the right eye was found to be 6/12, and in the left 6/24. The left eye showed a typical lamellar cataract, but in the right was a circular umbra with a fainter penumbra beyond the limits of the first; it appeared to be retro-nuclear, and there were no individual dots, spokes or striæ. Family history negative.

Sub-retinal Hæmorrhage.—Mr. R. Foster Moore.

F. A., aged 46, attended Moorfields, March 5th, 1910, complaining that two days previously a "smoky mist" came over the right eye. There was a specific history dating back 23 years ago, but nothing else discovered regarding the general health. The right vision was 6/60, and the left 6/6. In the right eye was a large retinal hæmorrhage involving the macula, near the center of which was a patch of pigment, almost circular in outline and four or five times the size of the disc, with sharply cut edges.

Persistent Mydriasis in an Eye in which the Lens has been Needled for High Myopia, Giving Rise to Secondary Glaucoma.—Mr. Rayner Batten.

In November, 1897, the right lens was needled, and in December, 1905, the tension was +1, and there was glaucomatous cupping with a widely dilated pupil.

Vertically Elliptical Cornea in a Case of Old Interstitial Keratitis.—Mr. J. F. Cunningham.

J. L., male, aged 50, attended St. Thomas's on November 8th, 1909. The right cornea showed haziness with new formed vessels, and at the upper end the verticle meridian was inclined slightly outwards in each eye. The retinoscopy in the right showed $\frac{-16D}{-6 \text{ cyl.} | \text{vert.}}$ and the left $\frac{-14 \text{ sph.}}{-5 \text{ cyl.} | \text{vert.}}$

PAPERS.

Xerosis of the Conjunctiva and Night Blindness.—Mr. M. L. Hepburn.

The characteristic features of this class of cases was described and the probable cause of the two associated symptoms was discussed. It was suggested that the rays of light during the sum-

mer months, when the complaint was most commonly met with, caused a retardation of the metabolism of the visual purple and also acted on the conjunctival mucous glands inhibiting their action. The two symptoms were closely related, since they simultaneously disappeared whenever a successful treatment had been adopted. Some advocated external remedies alone, while others were convinced of the efficacy of drugs internally without any external application, while bandaging the eyes also caused the disappearance of the xerosis and the night blindness.

Arising out of this discussion, it appeared that there was some reason for thinking that congenital night blindness, xerosis of the conjunctiva and night blindness, and the night blindness of malnutrition might be due to a common cause.

A Contribution to the Bacteriology of Panophthalmitis.—Mr. R. R. James.

Mr. James furnished notes of the case of a man, aged 37, who was admitted in St. George's Hospital on November 30th suffering from what appeared to be orbital cellulitis following injury from wound with a piece of steel. There was marked proptosis of the left eye with intense chemosis; the lids were œdematous and the cornea hazy, but no hypopyon. An exploratory incision was made into the orbit, but nothing was found. A cultivation from the wound showed streptococcus and staphylococcus aureus and albus. Two days later the eye still projected and the conjunctival sac was lined by a complete membrane of a rather tough consistency. On raising the upper lid it was found that the eyeball itself had suppurated and was commencing to discharge through a small opening in the upper part of the globe near the limbus. Evisceration was performed, and the patient made a good recovery.

Very thorough bacteriological investigation was carried out by Dr. Slater, with cultivation of the various micro-organisms found on different culture media, on milk, gelatine, potato, and blood serum; and amongst the others mentioned above was discovered a large gram-positive, immobile, non-sporing, gas-forming bacillus closely allied to the bacillus aerogenes capsulatus. Injection experiments were conducted which showed post-mortem results similar to those found in spreading traumatic gangrene. This is the first case of a gas-forming bacillus causing panophthalmitis described in England; but cases have been published in France, where a similar micro-organism is called the bacillus perfringens.

MALCOLM L. HEPBURN.

AMERICAN OPHTHALMOLOGICAL SOCIETY.

The Forty-sixth Annual Meeting of the American Ophthalmological Society will be held at the Arlington Hotel, Washington, D. C., at 10 A.M., Tuesday, May 3, 1910, instead of at 10 A.M., Wednesday, May 4. The order of presentation of papers at the meeting has been arranged as follows by the Bulletin Committee:

1. The Post-operative History of Eighteen Cases of Magnetic Foreign Bodies Removed from the Eye by the Haab or Giant Magnet. By Charles Stedman Bull, A.M., M.D., New York.
2. Possible Influence of Racial Characteristics in Accounting for the Success of the Smith-Indian Operation. By C. T. Clark, Columbus, Ohio.
3. Large Piece of Wood Embedded Deeply in the Orbit of Child Twenty-five Months. Removed with Preservation of Vision. By C. A. Veasey, M.D., Spokane, Wash.
4. Conjunctival Flaps in Ophthalmic Surgery. By W. Gordon M. Byers, M.D., Montreal, Canada.
5. Report of a Case of Leuco-Sarcoma of the Iris. Successful Removal by Iridectomy with Useful Vision. By J. Thorington, M.D., Philadelphia. Pathologic report by H. Goldberg, M.D.
6. New Growths of the Lacrimal Gland. A Case. Death. By Edwin E. Jack, M.D., Pathological report by F. H. Verhoeff, A.M., M.D., Boston, Mass.
7. Congenital Pigmentation of the Cornea. By T. B. Holloway, M.D., Philadelphia.
8. Report of a Case of Epibulbar Sarcoma. By C. A. Veasey, M.D., Spokane, Wash.
9. Cylindroma of Orbit. Report of a Case and Pathological Findings. By J. H. Claiborne, M.D., and E. L. Oatman, M.D., New York, N. Y.
10. Tumor of the Adrenal Gland, With Metastasis in the Orbit. By Alexander Quackenboss, M.D., Boston, Mass. Pathological examination by F. H. Verhoeff, M.D., Boston, Mass.
11. A Critical Study of the Ocular Asymmetry of the Formosan Savage. By Charles A. Oliver, A.M., M.D., Philadelphia.
12. Some Impressions of Certain Eye Affections in the Negro as Compared with the White Race. By J. L. Minor, M.D., Memphis, Tenn.
13. A Case Which Illustrates the Difficulty Sometimes Met with in the Diagnosis of a Subretinal Mass. By Robert L. Randolph, M.D., Baltimore, Maryland.

14. Glaucoma From Adhesion of the Lens Capsule to the Cornea. By Arnold Knapp, M.D., New York.

15. Some Observations on the Ocular Manifestations of Sinus Disease. By G. E. de Schweinitz, M.D., Philadelphia.

16. Implantation of a Metal Ball in Tenon's Capsule After Enucleation (Frost-Lang Operation), With Report of Cases. By William M. Sweet, M.D., Philadelphia.

17. Report of a Case of Chronic Cyanotic Polythæmia. By Walter R. Parker, B.S., M.D., and George Slocum, M.D., Detroit, Mich.

18. Monocular Hemianopsia, Left Eye. Embolism of the Central Artery of the Retina, Right Eye. By David Coggin, M.D., Salem, Mass.

19. Separation of the Retina, Both Eyes. By David Coggin, M.D., Salem, Mass.

20. The Nerve-Head in Wood Alcohol Amaurosis. By Percy Fridenberg, M.D., New York.

21. The Eye Signs of Vasomotor Incoordination or Ataxia. By Howard F. Hansell, M.D., Philadelphia, Pa.

22. A Case of Spasm of the Retinal Arteries. By Henry Dickson Burns, M.D., New Orleans, La.

23. Recurrent Tubercular Choroiditis. By Carl Koller, M.D., New York.

24. The Histological Findings in a Case of Tuberculous Cyclitis and a Theory as to the Origin of Tuberculous Scleritis and Keratitis, With Lantern Demonstration. By F. H. Verhoeff, M.D., Boston, Mass.

25. Vaccine and Serum Therapy in Ophthalmology. By John E. Weeks, M.D., New York.

26. Vaccine and Serum Therapy in Ocular Tuberculosis. By George S. Derby, M.D., Boston, Mass.

27. Suggestions Regarding the Nature of Visual Sensations. By George T. Stevens, M.D., New York.

28. A Brief Note Concerning the Tropometer. By G. T. Stevens, M.D., New York, N. Y.

29. Illuminated Box Eye Testing Chart. By Harris G. Sherman, M.D., Cleveland, Ohio.

30. Some Observations on the Use of the Schiötz Tonometer. By Wilbur B. Marple, M.D., New York.

31. The Different Prism Tests, With Presentation of a Convenient Arrangement of Prisms in Series. By Lucien Howe, M.D., Buffalo, N. Y.

32. The Heredity of Astigmatism of Muscular Anomalies. By Lucien Howe, M.D., Buffalo, N. Y.

ABSTRACTS FROM MEDICAL LITERATURE.

BY J. F. SHOEMAKER, M.D.,

ST. LOUIS, MO.

A CASE OF COMPLETE ALBINISM: OBSERVATIONS ON THE CHANGES IN THE DIAMETERS OF THE LENS AS SEEN THROUGH THE IRIS.

George F. Libby (*Trans. Am. Oph. Soc.*, 1909) reports the case of a girl between three and four years of age who was a complete albino. The child's hair was silver gray at birth and changed to a snow white by the time she was nine months of age. At that age she had developed a low, alternating, convergent squint. Photophobia was marked and constant and vision poor. She was in good health and her mental condition was good. There was no history of any other cases of albinism in the family nor any history of consanguinity in the four generations that could be investigated. Examination by the author showed "a pink skin, white hair on scalp, brows, and lids, light blue irides, photophobia, lateral nystagmus, which was rarely absent, and alternating strabismus, with 2 or 3 mm. of esotropia. There was absence of the uveal pigment, the red reflex of the choroid showing through both iris and sclera, causing the iris to look pink in day light and giving a firelight glow through pupil, iris and sclera when the interior of the eyes was illumined in the dark room. Each iris was very thin, only the sphincter pupillæ and scattered radiating fibers showing. Through the thinned irides the entire circumference of the lens margin could be plainly seen." Skiascopy under atropin cycloplegia showed 4.D. of mixed astigmatism in each eye, it being corrected by $-2.D.S. \bigcirc +4D.C.$ ax. 80. This correction ground in amber glass, number two, was prescribed, which greatly relieved the nystagmus and squint while the photophobia entirely disappeared and the vision improved very much. The irides being so thin the outline of the lens could be plainly seen and the following interesting observations made: With the eyes accommodating at 40 c.m., the transverse diameter of the lens was 9.5 m.m. Under the influence of eserine it was 9 m.m., while under the influence of atropin it was 10 m.m.

CHORIOIDITIS DEPENDENT UPON APPENDICITIS.

Robert T. Morris (*N. Y. Med. Jr.*, Jan. 1, 1910) reports the case of a minister, referred to him by his physician, who stated that he believed the chorioiditis with which the patient was suffering was dependent upon toxæmia resulting from a chronic appendicitis. The patient's vision with correcting lenses was: O.D.=20/70; O.S.=20/40. There was a central chorioiditis in the right eye, while in the left it was more diffuse. Morris upon examination found what he terms a "protective appendicitis." The appendix was removed and found to be fibrous. His recovery from the operation was rapid and several months later his physician found his vision with correcting lenses to be: O.D.=20/30; O.S.=20/20. There was slight chorioidal atrophy in the macular region of the right eye, but none was found in the left. The patient considers himself entirely well and has resumed his regular work again.

PRIMARY SARCOMA OF THE CILIARY BODY.

WITH REPORT OF A CASE, ENUCLEATION, RECURRENCE, AND
EXENTERATION OF ORBIT.

E. L. Klopp (*N. Y. Med. Jr.*, Feb. 19, 1910) states that primary sarcoma of the ciliary body is a rare occurrence, there being only about seventy cases reported in the literature. This is about one-tenth of the number of cases of primary sarcoma of the chorioid reported. The majority of the cases of sarcoma of the ciliary body are of the melanotic type, although the statistics of Fuchs and Groenow seem to indicate that the percentage of leucosarcomata is rather greater in the ciliary body than in the chorioid. The course of the disease in the ciliary body is practically the same as in the chorioid, it running through the four stages of Fuchs, if left alone, and causing the death of the patient either in the third or fourth stage. Sarcoma of the uveal tract is of the round celled or mixed round and spindle celled type, no case of giant celled sarcoma having been reported. The disease occurs most frequently in the fourth and fifth decades of life, according to statistics, and but two or three cases are reported as occurring previous to the tenth year. The author believes his patient to be the youngest suffering with this disease, so far reported. The growth was first noticed by the parents when the child was but a year and a half old, and as it was seen as a white mass in the pupil behind the iris it evidently had been

present several months already when first noticed. As small tumors of the ciliary body cannot be seen with the ophthalmoscope it is even more difficult to make an early diagnosis of them than of tumors of the chorioid. Transillumination can readily be used, but for a good shadow to be cast the growth will likely be large enough to be seen through the dilated pupil. Parsons and Fuchs believe that the growth is likely to involve the sclera sooner in this location on account of the perforation of the ciliary vessels. The case reported by Klopp was a leucosarcoma of the mixed round and spindle celled type. It was kept under observation at regular intervals and while enucleation was urged after the trouble was found to be malignant the parents refused their consent. About two and one-half years after the patient was first seen and nearly six months after the growth had perforated the sclera the parents consented to enucleation. At this time there was a tumor about the size of a hazel nut on the surface of the globe. Enucleation was done, removing all of the conjunctiva on the nasal side, where the growth was located. Healing was prompt, but three months later there was a hard mass in the stump and the orbit soon became filled. A thorough evisceration of the orbit was performed and now, three years later, there has been no evidence of a recurrence.

ABSENCE OF IRITIS AND CHOROIDITIS AMONG SYPHILITICS WHO HAVE BECOME TABETIC.

E. F. Snyder (Jr. *A. M. A.*, March 19, 1910) has made the observation that in all the cases of tabes whose eyes he has examined there is an entire absence of evidences of syphilis in the eyes, such as iritis or choroiditis. Further, of 79 cases of syphilitic iritis and 42 cases of syphilitic choroiditis of which he has records none has developed tabes so far as he has been able to follow them. In looking through the medical literature he finds the same observation made by Wernicke in regard to tabes and by Wintersteiner in regard to paresis. Wernicke has laid down this dictum: "Syphilitics who have suffered from specific iritis or choroiditis do not acquire tabes." While this seems to be a very broad statement, Snyder's limited experience seems to verify it.

Wintersteiner examined the eyes of 1,000 patients, all of whom, he believed, were syphilitic and found that the optic nerve was affected in 28.5 per cent. of the cases, there were choroidal changes in 3.86 per cent. of the cases and iritic changes in 1.76

per cent. Thus the uvea, iris and choroid, was affected in 5.62 per cent. of the cases, or about one-fifth, as often as the optic nerve. Snydacker compares this with the following statistics taken at random from the literature:

In 114 cases of syphilitic eye diseases Drewes found the uvea involved 73 times, the optic nerve 4 times; Alexander in 1,385 cases found the uvea involved 331 times, the optic nerve 107 times; Galezowski in 128 cases found the uvea involved 52 times, the optic nerve 31 times; Eveille in 301 cases found the uvea involved 143 times, the optic nerve 58 times; Schubert in 231 cases found the uvea involved 156 times, the optic nerve 8 times; Badal in 793 cases found the uvea involved 383 times, the optic nerve 139 times; Talbot in 434 cases found the uvea involved 262 times, the optic nerve 60 times; Boeck in 139 cases found the uvea involved 126 times, the optic nerve 5 times; Stammwitz in 197 cases found the uvea involved 40 times, the optic nerve 14 times. The total of these syphilitic cases shows that the uvea is involved nearly twice as often as the optic nerve, whereas Wintersteiner, in the 1,000 cases of parietic dementia found the uvea involved only about one-fifth as often as the optic nerve. The author thinks the difference is too great to be merely accidental and believes we are justified in concluding that where paresis is present the uvea is not nearly so likely to be involved as the optic nerve. He does not agree with Wintersteiner's theory that sometimes the syphilitic poison attacks the ectodermic structures, in which case the cerebro-spinal system suffers most, while at other times the mesodermic structures are attacked, in which case the iris and choroid with other mesodermic structures are affected and the nerve tissue escapes. This theory seems irrational to him. He suggests one based upon Ehrlich's theory of antibodies. Von Wagner has long noted the fact that most parietics have had the secondaries of syphilis very lightly. If tabes and paresis are due, not directly to syphilitic virus but to the injurious action of antibodies upon cord and brain, it would naturally follow that the more antibodies there are the greater the danger of tabes or paresis. Antibodies are largely absent where secondaries are severe. As iritis is generally a secondary of syphilis, the antibodies not being present in large numbers there is not much danger of tabes. But on the other hand, if the secondary symptoms of syphilis are absent, not because of active antisyphilitic treatment, but because of the large number of antibodies, there is no iritis but much more danger of tabes. This theory agrees with the recognized fact that tabes and paresis is

more frequent among syphilitics who have had little effective treatment and yet have had slight secondary manifestations of the disease, their symptoms being controlled not by effective treatment but by large quantities of antibodies which later acted destructively on the brain and cord. If this theory be true a syphilitic patient who has had iritis can be assured that the chances of his suffering later from tabes or paresis are very small, an assurance which may save intelligent patients a great deal of mental anguish.

BLINDNESS FROM HEROIN IN THE NOSTRUM "HABITINA."

Edward Stieren (*Jr. A. M. A.*, March 12, 1910) reports a case of amblyopia in an intelligent negro woman who was taking "Habitina" as a cure for the morphine habit. The nostrum contained 16 grains of morphin and 8 grains of heroin to the ounce. Beginning with 10 drops three times daily she increased it until she was taking six or eight teaspoonfuls daily, equivalent to 2 grains of morphin and 1 grain of heroin six or eight times daily. She came complaining of dimness of vision and pain in the head, shoulders and abdomen. Stieren describes his findings thus: "The ophthalmic picture she presented was striking and characteristic of blindness; the pupils were widely dilated and reacted sluggishly to light and accommodation; either eye diverged markedly on covering. The subjective symptoms were diplopia and failure to recognize objects when looking directly at them; a large central scotoma could be demonstrated in each eye, with peripheral vision apparently but little diminished. The ophthalmoscope revealed a slight hyperæmia of the discs, edges blurred, and decided fullness of the retinal veins." Under eliminative and supporting treatment she improved rapidly and was discharged in about one month with vision 6/8 in either eye.

CONSERVATIVE SURGERY IN OCULAR INJURIES.

L. Webster Fox (*Penn. Med. Jr.*, March, 1910) states that "the resistance of various ocular tissues to injury varies in proportion to their location, their composition and their properties as culture media to subsequent bacterial proliferation, upon all of which also depend, to a large degree, the course and prognosis of a given case." He cites cases which he has seen that illustrate this point. An injury resulting in an almost complete severance of an ocular muscle from a piece of wood imbedded in the eyeball resulted in recovery with full function of the ocu-

lar muscles and visual acuity of the eye; a case where collodion got into the eye showed complete denudation of the corneal epithelium, showing fluorescein stain over the whole cornea, was followed by very rapid regeneration of the epithelium and restoration of sight.

In contrast to these cases, another one rapidly developed panophthalmitis after a slight injury to the eye by being struck by a pair of plyers. Rapid encapsulation of a foreign body will often prevent further involvement. While pieces of stone in the eye usually cause severe inflammatory reaction, he refers to one case in which a piece remained quiescent in the iris for thirty-two years; another case is mentioned in which a piece of glass had remained in the anterior chamber for ten years, the eye remaining quiet. Reference is made to a number of unusual cases. In one a piece of hemlock plank pierced the forehead just above the brow, penetrating the tissues quite deeply above three-quarters of an inch from the nasal bone. It was pulled out and when the patient saw a physician, forty-five minutes later, the eye was badly swollen. After seven weeks the case was brought to Fox, who advised an exploratory operation. His description of the operation is as follows:

"An incision was made through the conjunctiva and capsule of Tenon. A silk thread was passed through the tendon of the internal rectus muscle, which was then completely tenotomized, considerable adhesions and cicatricial tissue being present. The portion of the muscle holding the ligature was then retracted, exposing a piece of splinter of wood one and one-half inches long, and from five to six millimeters in diameter. This wood had escaped the muscle and was wedged between it and the sclerotic coat. After removing the wood with forceps and cleansing the wound, the severed ends of the muscle were reattached to the eyeball. For a short time after the wound healed there was slight diplopia. At the present time there is binocular single vision, the excursions of the eyeball are normal in every direction, and the visual acuity is 20/20. Another case illustrates how an eye may recover after the loss of considerable vitreous. A boy pierced his eyeball with an ice pick, producing a wound one-eighth of an inch in diameter with the loss of considerable vitreous. The bead of vitreous was snipped off, the eye irrigated and a pressure bandage applied. At the next dressing, there being another small bead of vitreous in the wound, it was again snipped off, the wound touched with solid stick of nitrate of silver, and a conjunctival suture inserted. Atropin was instilled

regularly. In sixteen days the eye had completely recovered with vision of 20/30. In another case a broken piece of skylight struck the patient on the brow, cutting through both lids and the globe, causing a prolapse of the iris and the loss of considerable vitreous through the scleral wound. Having united the wounds with sutures the patient was put to bed and under the use of atropin and an antiseptic lotion locally the eye recovered with 20/30 vision."

This the author considers as a remarkable illustration of conservative surgery. A number of other interesting cases are referred to. Fox does not believe that a wound in the "danger zone" necessarily means a bad prognosis. Much depends upon whether the ciliary processes are injured or not in an incised wound. If the incision penetrates between the ciliary processes the ciliary involvement is very slight, while if the cut is diagonal the ciliary processes are much more likely to be involved and the prognosis is much worse. He employs cold compresses of mercuric iodid solution 1 to 5000 and gives gray powder internally in from two to five grain doses three times daily for the relief of pain. If the pain continues after the second day he stops the gray powder and gives the salicylates in large doses according to Gifford's method for sympathetic ophthalmia. Fox believes this is of value not only after sympathetic inflammation has set in but also to prevent it and for the relief of pain. He finds the average patient will tolerate from seven a.m. to ten p.m. one grain to each pound of his body weight. In penetrating wounds of the cornea, after three or four days, when a slight line of newly formed epithelial tissue shows, he believes it is good practice to apply a small corneal electric cautery along the whole line of the wound. He has noticed remarkably rapid healing following this procedure.

Concerning enucleation and its substitutes, he prefers Mules' operation if there are no special contraindications. He has done this operation four hundred times and has never had a case of sympathetic ophthalmia follow it. This he attributes to four causes, (1) rigid asepsis during the operation; (2) thorough evacuation of the scleral cup, especially the tissue of the uveal tract and optic nerve, not a vestige of either remaining before the insertion of the ball; (3) the severance of the posterior ciliary vessels and nerves so as to prevent a transmission of any harmful nature to the fellow eye; (4) the employment of gold as an artificial vitreous, instead of glass, silver, paraffin, or other substance. He believes the reasons originally advanced by Mules for this operation have proved and still are good and sufficient ones.

REVIEWS.

REFRACTION AND HOW TO REFRACT. By James Thorington, A.M., M.D. Fifth revised edition. 251 illustrations, 13 of which are colored. P. Blakiston's Son & Co. Philadelphia, 1910. Price \$1.50.

A book on a medical subject which in ten years has seen five editions has certainly proven its value and usefulness. Of the former recommendations we have given this practical manual we have nothing to detract, we can only add further recommendation to them.

DIE BEDEUTUNG DER AUGENHYGIENE FÜR DEN STAAT, MIT BESONDERER BERÜCKSICHTIGUNG DER WEHRFRAGE. Dr. Franz Heilbronn. S. Karger, Berlin, 1910.

(The value of hygiene of the eyes for the state, with especial consideration as to military service.)

This book which appeals not only to the medical world, but to a much larger circle, is dedicated especially to the prevention of ocular affections which in Germany particularly influence the usefulness of her citizens. In the foreground of these stands myopia. The author devotes the larger part of the book to the explanation of the character of myopia, its acquisition with or without heredity and its dire results in the pernicious form. Among the prophylactic measures he contends, and we think rightly, that during their school life the children's eyes should be under continued control of school oculists. Then he discusses other affections as trachoma and preventable injuries. Finally general diseases and diatheses are taken up which show a direct influence on the conditions of the eyes. Here we find scrophulosis, tuberculosis, rhachitis, gonorrhoea and syphilis, alcohol and tobacco poisoning. In concluding the author besides other things insists on the necessity of a continued medical control of myopic eyes by school oculists and on the necessity of protective spectacles for workingmen and laborers.

The subject is well treated and while not exactly new in its teachings we wish it success since what it preaches in such a clear and logical way cannot be preached too much.

A PRACTICAL TREATISE ON OPHTHALMOLOGY. By L. Webster Fox, M.D., LL.D. With 6 colored plates and 300 illustrations in the text. D. Appleton & Co., New York and London, 1910.

Among the many complete treatises on ophthalmology in the English language, this is surely one of the best. As a new feature it has a chapter on laboratory technique which will be of great help to the student. It is beautifully illustrated and printed in clear, large type. Its success cannot be doubtful. ALT.